

NEW AUSTRALIAN RECORDS OF XEROPHILIC ACARIFORM MITES (ORIBATIDA AND PROSTIGMATA)

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Abstract

The first Australian records of four xerophilic mite taxa are reported. *Amnemochthonius taeniophorus* Grandjean (Oribatida: Haplochthoniidae) was collected from soil in southwestern Western Australia. *Gordialycus tuzetae* Coineau *et al.*, two undescribed species of *Nematalycus* Strenzke (all *Nematalycidae*) and an undetermined species of *Stigmocheylus* Berlese (*Stigmocheylidae*) were represented in a collection from a coastal sand dune near Perth. Neither of the latter two families has been reported previously from Australia.

Introduction

Xerophilic mites – ones found predominantly in dry environments, or in dry microhabitats within mesic environments – are found in most major taxa of the mite order Acariformes and even some entire families may be so characterized. One example is the oribatid mite family Haplochthoniidae, which with four other xerophilic families comprise the Protophoroidea (Norton *et al.* 1983). Another is *Nematalycidae*, the three known genera of which inhabit fine sands (Thibaud and Coineau 1998). This latter family is usually included in a paraphyletic group of early-derivative acariform mites, the Endeostigmata (Krantz 1978, Evans 1992), but is considered by others (e.g. Kethley 1982) to be closely related to Tydeoidea (Prostigmata). Our purpose is to report the first Australian records for several taxa in these families, as well as another taxon whose habitat requirements are poorly known.

Discussion

Haplochthoniidae has few known species but one, *Haplochthonius simplex* Willmann, is widely distributed and is a common human associate (Grandjean 1946). Two species in the genus are known from Australia, though neither has been identified (Colloff and Halliday 1998). The second genus in the family, *Amnemochthonius* Grandjean, was known only from the type species, *A. taeniophorus* Grandjean. The latter was described from 18 specimens from xeric habitats in southern and western France (Grandjean 1948) and no collections have been reported since in the literature. Based on our comparisons with Grandjean's (1948) meticulous description, the same species is represented at two xeric locations in Western Australia.

One adult, one tritonymph, one deutonymph and one larva of *A. taeniophorus* were collected from 'good condition' swale sites on Booletana Station (24°39'S, 113°42'E), 50km north of Carnarvon, Western

Australia, in soils of the Sable Land System, in August 1994. One adult was collected from Widgiemooltha (31°30'S 121°32'E), in relict laterite soils of the Greenstone belt region of the Eastern Goldfields, within the former CRA (Conzinc Rio Tinto) prospecting site, Widgiemooltha No. 3 (described in Kinnear 1991), in November 1985.

This mite has a number of curious morphological traits. For example, Grandjean (1948) noted that the dorsal setae in rows *ps* and *h* bend to the left on both sides in his French specimens. He questioned whether this asymmetry would prove to be a variable trait, but the same distinct bend is present in the Australian specimens. Grandjean (1948) did not study a larva of this species but he predicted the absence of Claparède's organ, the papilla-like structure found between the bases of leg I and II. His rationale was that other instars of this mite lack genital papillae and there is a close correlation between the form of these two types of organs in other oribatid mites. Indeed, the larva we studied lacks this organ.

Specimens of three species of Nematalycidae, representing the first records of the family from Australia (cf Halliday 1998), were collected by us from Mindare Keys Beach, north of Perth, Western Australia (31°57'S 115°31'E) on 18 April 1998. The mites were washed from calcareous, unconsolidated fine sand on the vegetated lee side of a large, coastal foredune, in the Quindalup dune system (see description in Seddon 1972). One, *Gordialycus tuzetae* Coineau *et al.* (1967), is a greatly elongated, vermiform species that was first recorded from beach sand on the coast of southern France. As recently summarized by Thibaud and Coineau (1998), it has since been reported from inland sites in South Africa, Namibia and Turkmenistan. The latter authors included new records of the genus (it is currently monotypic) from Venezuela, Cuba, Mauritania and New Caledonia. Our specimens, collected at a depth of 0-30 cm, closely match the original description of this species and we have no reservation about its identity. At deeper levels in this same location (60-90 cm), we found several specimens of what appear to be two undescribed species of *Nematalycus* Strenzke. Both are most similar to *N. strezkei* Cunliffe, especially in having a much richer hysterosomal chaetome, relative to the only other described species, *N. nematoides* Strenzke. However, each has distinctly different appendage structures.

Two specimens of an undetermined species of *Stigmocheylus* Berlese were collected from 60-90 cm depth in the same sand dune. This genus, currently monotypic and previously unreported from Australia, is usually included in the anystine family Pseudochelidae (other genera of which are known from Australia: Halliday 1998). Kethley (1990) transferred this genus to the monogeneric Stigmocheylidae. The general habitat requirements of these mites are not yet well characterized.

Voucher specimens of all five mites are in the collection of the second author. Vouchers of the nematalycids and *Stigmocheylus* sp. are in the Western Australian Museum.

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